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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/866,990	05/30/2001	Ryuichiro Maeyama	046601-5097	4511

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EXAMINER

HAMPTON HIGHTOWER, PATRICIA

ART UNIT PAPER NUMBER

1711

DATE MAILED: 05/19/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/866,990

Applicant(s)

MAEYAMA ET AL.

Examiner

Patricia Hightower

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 January 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-32 is/are pending in the application.
- 4a) Of the above claim(s) 1, 2 and 15-20 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 3-14 and 21-32 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 May 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☒ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s) _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 4 6) ☐ Other: _____

Response to Amendment

In view of the applicants' response and amendment filed January 14, 2003 the rejection of the claims 3-14 under 35 USC 102(b) as being anticipated by Lam et al (USP 5,236,572) has been withdrawn because the reference does not teach or suggest forming a metallic thin layer on an inner or interior surface of a cylindrical substrate (drum) as instantly claimed in the process of producing an endless belt.

However, the claims 3-14 and 21-32 are subject to a new ground of rejection under 35 USC 102(b) as anticipated by Nakajima et al (USP 5,411,779 newly cited) and under 35 USC 103 as being obvious over Lam et al (USP 5,236,572 of record) in view of Nakajima et al (USP 5,411,779 newly cited).

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 3-14 and 21-32 are newly rejected under 35 U.S.C. 102(b) as being anticipated by Nakajima et al (USP 5,411,779 newly cited).

Nakajima et al (USP 5,411,779 newly cited) discloses a composite tubular article for use as the fixing belt (endless belt, see example 1) which anticipates the claimed invention; wherein the belt consists of a polyimide resin as the inner layer and a fluoroplastic as the outer layer, in an image-forming device and a process for producing the same, a process in which the outer layer is formed by use of a cylinder (stainless

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steel) having an inner circumferential surface with a surface roughness of 1 to 10 μm and a polyimide-resin tubular inner layer formed on the inner circumferential surface of the outer layer by converting a poly(amic acid) into a polyimide [wherein the outer circumferential surface of the formed polyimide-resin tubular inner layer is subjected to at least one treatment (etching treatment) selected from alkali treatment, primer treatment, corona treatment, plasma treatment, and UV treatment and thereafter the fluoroplastic tubular outer layer is formed) or a process in which an inner layer formed by converting a poly(amic acid) into a polyimide is immersed in or sprayed with a fluoroplastic solution in which a particulate material (the electrically conductive substance include electrically conductive powders such as carbon, graphite or **metal powders** and inorganic and organic compounds having electrical conductivity) of 5 μm or smaller has been dispersed thereby to form an outer layer. See abstract; col. 1, lines 13-22, 23-53; col. 2, lines 2-42, 46-61, 66-68; col. 3, lines 3-11, 12-65, 66-68; col. 4, lines 1-17, 18-32, 33-37, 38-68; col. 5; col. 6, lines 30-68; col. 7, lines 1-32, 33-36, 37—68; cols. 8-9; example 1, especially; examples 2-13; col. 19, lines 13-46, 47-53; claims 1-13.

In Example 1, the patentee teaches a poly(amic acid) solution was prepared, separately, a stainless steel cylinder having a specific inner diameter, wall thickness and length and in which the inner circumferential surface had been roughened to have a surface roughness of 2 μm was immersed in an electrically conductive fluoroplastic dispersion and a carbon black dispersion and then drawn up at a speed of 30 mm/min. Subsequently, the resulting cylinder was heated and dried at 100°C for 60 minutes and

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then at 400°C for 5 minutes, thereby forming a fluoroplastic tubular article on the inner circumferential surface of the cylinder. Next, the stainless-steel cylinder on which the fluoroplastic tubular article had been formed was immersed in the poly(amic acid) solution, thereby applying the poly(amic acid) solution to thereby coat the poly(amic acid) solution on the inside of the fluoroplastic tubular article. After coating, the resulting cylinder was heated treated to remove water and cause imidization. Thereafter, the resulting cylinder was cooled to room temperature to obtain a two-layer composite tubular article. This composite tubular article was then peeled from the stainless-steel cylinder and taken out. This composite tubular article was free of coating unevenness and almost uniform in the thickness of each layer, and the uniform roughness of the inner circumferential surface of the cylinder had been transferred to the outer circumferential surface of the composite tubular article. This composite tubular article was used as the fixing belt (endless belt) in an ink-regenerating type thermal transfer printer. As a result, a fixing system was obtained in which the fixing belt (endless belt) was good in the property of releasing the paper to which a heat sensitive ink had been fixed (the fixing belt was good in so-called offset properties). The image thus obtained had a uniform, matt surface.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 3-14 and 21-32 are newly rejected under 35 U.S.C. 103(a) as being unpatentable over Lam et al (USP 5,236,572 of record) in view of Nakajima et al (USP 5,411,779 newly cited).

Lam et al (USP 5,236,572 of record) discloses a method for continuously manufacturing parts requiring precision micro-fabrication, the method includes **a first step of moving a surface of a mandrel having a reusable pattern thereon through an electroforming bath, a second step of depositing a metal layer on the surface of the mandrel in the shape of a pattern while the mandrel surface moves through the bath, and a third step of separating the metal layer from the mandrel surface after the metal layer has been deposited to a selected thickness. The mandrel can take various forms. For instance, the mandrel can be a movable belt or in the alternative the mandrel can be a rotatable drum. When the mandrel is a movable belt, the belt can be made, for instance of a sheet of polymer material such as polyimide having a metallized thin film such as titanium or chromium/titanium thereon forming the reusable pattern. When the mandrel is a drum, the drum can comprise an electrically conductive material such as stainless steel having a dielectric material thereon such as silicon carbide, nitride or oxide thereon [(4) peeling the plating from the mandrel, the electroplated film being easily removed due to (an oxide surface) on the stainless steel which causes plated metals to only weakly adhere to the oxide surface; col. 1, lines 63-67] for defining the reusable pattern** See abstract; col. 1, lines 47-68; col. 2, lines 1-7, 11-21, 22-25, 26-41, 67-68; col. 1, lines 63-67; col. 3, lines 1-11, 12-20, 21-23, 37-45, 46-52.

Lam et al teaches the belt can be fabricated in a number of ways. For instance, a thin metal film can be metallized on a polyimide substrate. The thin metal film is etched such as by chemical etching, dry etching or plasma etching through to the polyimide substrate such that the thin metal film which remains after the etching has the shape of the photoresist. The drum can be prepared in a similar manner. See col. 4, lines 1-12; col. 3, lines 67-68; col. 4, lines 14-30, 31-36; claims 1-16.

However, the reference differs in not teaching that the metallic thin film is formed on the inner or interior surface of a cylindrical substrate or drum as instantly claimed.

Nakajima et al (USP 5,411,779 newly cited) discloses a composite tubular article for use as the fixing belt (endless belt, see example 1), wherein the belt consists of a polyimide resin as the inner layer and a fluoroplastic as the outer layer, in an image-forming device and a process for producing the same, a process in which the outer layer is formed by use of a cylinder (stainless steel) having an inner circumferential surface with a surface roughness of 1 to 10 μm and a polyimide-resin tubular inner layer formed on the inner circumferential surface of the outer layer by converting a poly(amic acid) into a polyimide [wherein the outer circumferential surface of the formed polyimide-resin tubular inner layer is subjected to at least one treatment (etching) selected from alkali treatment, primer treatment, corona treatment, plasma treatment, and Uv treatment and thereafter the fluoroplastic tubular outer layer is formed) or a process in which an inner layer formed by converting a poly(amic acid) into a polyimide is immersed in or sprayed with a fluoroplastic solution in which a particulate material (the electrically conductive substance include electrically conductive powders such as

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carbon, graphite or **metal powders** and inorganic and organic compounds having electrical conductivity) of 5 μm or smaller has been dispersed thereby to form an outer layer. See abstract; col. 1, lines 13-22, 23-53; col. 2, lines 2-42, 46-61, 66-68; col. 3, lines 3-11, 12-65, 66-68; col. 4, lines 1-17, 18-32, 33-37, 38-68; col. 5; col. 6, lines 30-68; col. 7, lines 1-32, 33-36, 37—68; cols. 8-9; example 1, especially; examples 2-13; col. 19, lines 13-46, 47-53; claims 1-13.

In Example 1, the patentee teaches a poly(amic acid) solution was prepared, separately, a stainless steel cylinder having a specific inner diameter, wall thickness and length and in which the inner circumferential surface had been roughened to have a surface roughness of 2 μm was immersed in an electrically conductive fluoroplastic dispersion and a carbon black dispersion and then drawn up at a speed of 30 mm/min. Subsequently, the resulting cylinder was heated and dried at 100°C for 60 minutes and then at 400°C for 5 minutes, thereby forming a fluoroplastic tubular article on the inner circumferential surface of the cylinder. Next, the stainless-steel cylinder on which the fluoroplastic tubular article had been formed was immersed in the poly(amic acid) solution, thereby applying the poly(amic acid) solution to thereby coat the poly(amic acid) solution on the inside of the fluoroplastic tubular article. After coating, the resulting cylinder was heated treated to remove water and cause imidization. Thereafter, the resulting cylinder was cooled to room temperature to obtain a two-layer composite tubular article. This composite tubular article was then peeled from the stainless-steel cylinder and taken out. This composite tubular article was free of coating unevenness and almost uniform in the thickness of each layer, and the uniform roughness of the

inner circumferential surface of the cylinder had been transferred to the outer circumferential surface of the composite tubular article. This composite tubular article was used as the fixing belt (endless belt) in an ink-regenerating type thermal transfer printer. As a result, a fixing system was obtained in which the fixing belt (endless belt) was good in the property of releasing the paper to which a heat sensitive ink had been fixed (the fixing belt was good in so-called offset properties). The image thus obtained had a uniform, matt surface.

Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made in view of the teaching of Nakajima that a composite tubular article for use as a fixing belt (endless belt) suited for thermal fixing an image in an image forming device, consisting of a polyimide resin as the inner layer and a fluoroplastic as the outer layer wherein the fluoroplastic solution containing an electrically conductive substance, such as conductive metal powders) which resulted in a fixing belt (endless belt) that was good in the property of releasing the paper and good in so-called offset properties; that the metallic thin film as taught by Lam could have been coated on the inner surface of the drum; thereby obtaining the invention as claimed.

Applicant's arguments with respect to claims 3-14 have been considered but are moot in view of the new ground(s) of rejection.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Prior Art

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. These references are cited to show the state of the art of preparing polyimide multilayer film laminates, production of belt for electrostatic recording and to define mandrel; Kanakarajan, UBE Industries Ltd, Hokushin Ind. Inc., Tan and Merriam-Webster.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Patricia Hightower whose telephone number is (703) 308-2434. The examiner can normally be reached on Monday – Friday from 9:30 A.M. - 6:00 P.M.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, James Seidleck can be reached on (703) 308-2462. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9310 for regular communications and (703) 872-9311 for After Final communications.

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

P. Hightower:mn
April 15, 2003

P. Hampton Hightower

P. Hampton Hightower
Primary Examiner
Art Unit 1711